

Applicant : Ajay Gupta  
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In the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A portable multi-functional electronic communication and medical diagnostic device operable in a first operational mode as one or more of a cellular phone, pager, and beeper, and in a second operational mode for use in a medical diagnosis, the device comprising:

an outer casing;

a vibratory component disposed within the outer casing for generating vibration at one or more of an available plurality of magnitudes, the vibratory component being adapted to generate vibration in the first operational mode of the device in response to a remote wireless signal when the device is operated as one or more of a cellular phone, pager, and beeper, the vibratory component being further adapted to generate vibration in the second operational mode of the device at one or more selected magnitudes when the device is used in a medical diagnosis;

a mode selector for selecting between the first operational mode of the device and the second operational mode of the device; and

~~a probe projecting outwardly from the outer casing for transmitting vibration from the vibratory component to a subject; and~~

a display for indicating the magnitude of vibration being generated by the vibratory component in the second mode.

2. (Canceled)

3. (Canceled)

4. (Previously Presented) The device of claim 1, further comprising a selector for selecting the one or more magnitudes of vibration in the second mode.

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5. (Previously Presented) The device of claim 4, wherein the component generates vibration of a fixed magnitude in the second mode.
6. (Previously Presented) The device of claim 4, wherein the component generates a plurality of sets of vibration each of a fixed magnitude in the second mode.
7. (Previously Presented) The device of claim 4, wherein the component generates vibration of a variable magnitude in the second mode.
8. (Previously Presented) The device of claim 7, wherein the magnitude is variable in a linear, curvilinear, or step-like manner.
9. (Previously Presented) The device of claim 55, wherein the component generates vibration at a fixed frequency in the second mode.
10. (Previously Presented) The device of claim 55, wherein the component generates a plurality of sets of vibration each at a fixed frequency in the second mode.
11. (Previously Presented) The device of claim 55, wherein the component generates vibration at a variable frequency in the second mode.
12. (Previously Presented) The device of claim 1, wherein the device can be used in the second mode to determine one or more of a vibration perception threshold, a vibration disappearance threshold, and a vibration threshold, the device further comprising one or both of an audio display and a visual display to indicate one or more of the vibration perception threshold, the vibration disappearance threshold, and the vibration threshold.
13. (Previously Presented) The device of claim 12, further comprising at least one component for storing and/or processing data including one or more of the vibration perception threshold, the vibration disappearance threshold, and the vibration threshold.

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14. (Previously Presented) A portable multi-functional electronic communication and medical diagnostic device operable in a first mode and in a second mode, comprising:

an outer casing;

a vibratory component disposed within the outer casing for generating vibration at one or more of an available plurality of magnitudes and at least one frequency, the vibratory component being adapted to generate vibration at a preprogrammed magnitude and frequency in the first mode of the device, the component being adapted to generate vibration at a frequency and at one or more selected magnitudes in the second mode of the device;

a selector for selecting one or the other of said first and second modes;

a probe from transmitting vibration from the vibratory component to a subject; and

a display for indicating one or more of the magnitude of vibration and the frequency of vibration in the second mode;

wherein in the first mode the device functions as a portable electronic device comprising one or more of a cellular phone, pager, and beeper; and

wherein in the second mode the device operates to detect the presence or absence of neuropathy in a subject.

15. (Canceled)

16. (Canceled)

17. (Previously Presented) The device of claim 14, wherein the selected magnitude comprises a fixed magnitude.

18. (Previously Presented) The device of claim 17, wherein the selected magnitude comprises a plurality of sets of vibrations each of a fixed magnitude.

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19. (Previously Presented) The device of claim 14, wherein the selected magnitude comprises a variable magnitude.

20. (Previously Presented) The device of claim 19, wherein the selected magnitude varies in a linear, curvilinear, or step-like manner.

21. (Previously Presented) The device of claim 14, wherein the selected frequency comprises a fixed frequency.

22. (Previously Presented) The device of claim 14, wherein the selected frequency comprises a plurality of sets of vibration each at a fixed frequency.

23. (Previously Presented) The device of claim 14, wherein the selected frequency comprises a variable frequency.

24. (Previously Presented) The device of claim, 14, wherein the probe can be used to determine one or more of a vibration perception threshold, a vibration disappearance threshold, and a vibration threshold, the device further comprising one or both of an audio display and a visual display to indicate one or more of the vibration perception threshold, the vibration disappearance threshold, and the vibration threshold.

25. (Previously Presented) The device of claim 24, further comprising at least one component for storing and/or processing data including one or more of the vibration perception threshold, the vibration disappearance threshold, and the vibration threshold.

26. (Canceled)

27. (Canceled)

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28. (Currently Amended) A medical diagnosis method, comprising:

providing a portable multi-functional electronic communication and medical diagnostic device selectively operable in either a first operational mode ~~and~~ or a second operational mode, the device comprising a component for generating vibration at one or more of an available plurality of magnitudes, an outer casing enclosing the component, ~~and a probe extending outwardly from the outer casing, the probe being caused to vibrate by the component,~~ the component being adapted to generate vibration in response to a remote wireless signal in the first mode when the device is operated as an electronic communication device comprising one or more of a cellular phone, pager, and beeper, the component being further adapted to generate vibration in the second mode when the device is used for medical diagnosis;

selecting the second mode of the device ~~to the exclusion of the first mode of the device;~~ selecting one or more magnitudes of vibration to be used in medical diagnosis;

generating vibration;

applying the probe to a subject; and

diagnosing a medical condition based on detection or non-detection of vibration by the subject.

29. (Canceled)

30. (Previously Presented) The method of claim 28, further comprising determining a threshold for the subject's ability to detect vibration based on whether the subject can detect vibration at the selected one or more magnitudes of vibration.

31. (Previously Presented) The method of claim 30, wherein the threshold is graded low if the subject detects vibration, and high if the subject cannot detect vibration.

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32. (Previously Presented) The method of claim 30, further comprising increasing the magnitude of vibration and determining a vibration perception threshold based on the subject's ability to detect vibration while the magnitude of vibration is increased.

33. (Previously Presented) The method of claim 32, wherein the vibration perception threshold is graded low, medium, or high when compared to a preset standard thereby indicating the severity of the medical condition.

34. (Previously Presented) The method of claim 30, further comprising decreasing the magnitude of vibration and determining a vibration disappearance threshold based on the subject's ability to no longer detect vibration while the magnitude of vibration is decreased.

35. (Previously Presented) The method of claim 34, wherein the vibration disappearance threshold is graded low, medium, or high when compared to a preset standard thereby indicating the severity of the medical condition.

36. (Previously Presented) The method of claim 28, wherein the medical condition comprises neuropathy.

37. (Previously Presented) The method of claim 36, wherein the step of generating vibration comprises generating vibration of a magnitude corresponding to about the 95th-97th percentiles of a threshold magnitude of vibration for neuropathy in a normal population.

38. (Previously Presented) The method of claim 37, wherein detection of vibration by the subject indicates an absence of neuropathy, and non-detection indicates a presence of neuropathy.

39. (Previously Presented) The method of claim 30, wherein the magnitude of vibration is fixed.

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40. (Previously Presented) The method of claim 30, wherein the magnitude of vibration is variable in a linear, curvilinear, or step-like manner.

41. (Previously Presented) The method of claim 36, wherein the device is applied to an extremity of the subject.

42. (Currently Amended) A method of detecting neuropathy in a subject, comprising:  
providing a portable multi-functional electronic communication and medical diagnostic device selectively operable in either a first operational mode ~~and~~ or a second operational mode, the device comprising a component for generating vibration at one or more of an available plurality of magnitudes, an outer casing enclosing the component and a probe extending outwardly from the outer casing, the probe being caused to vibrate by the component, the component being adapted to generate vibration in response to a remote wireless signal in the first mode when the device is operated as an electronic communication device comprising one or more of a cellular phone, pager, and beeper, the component being further adapted to generate vibration at a selected one or more selected magnitudes in the second mode when the device is used for medical diagnosis;  
selecting the second mode of the device ~~to the exclusion of the first mode of the device~~;  
generating vibration and applying the probe to a subject;  
allowing the subject to indicate whether or not vibration can be detected; and  
determining the absence or presence of neuropathy by the subject's ability to detect or not detect the vibration.

43. (Canceled)

44. (Previously Presented) The method of claim 42, wherein the magnitude of vibration generated by the component corresponds to about the 95th-97th percentiles of a threshold magnitude of vibration for neuropathy in a normal population.

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45. (Previously Presented) The method of claim 42, wherein the step of generating vibration comprises generating vibration of a fixed magnitude.

46. (Previously Presented) The method of claim 42, wherein the step of generating vibration comprises generating vibration of a variable magnitude.

47. (Previously Presented) The method of claim 46, wherein comprising increasing the magnitude of vibration and determining a vibration perception threshold based on the subject's ability to detect vibration while the magnitude of vibration is increased.

48. (Previously Presented) The method of claim 47, wherein the vibration perception threshold is graded low, medium, or high when compared to a preset standard thereby indicating the severity of neuropathy.

49. (Previously Presented) The method of claim 46, further comprising decreasing the magnitude of vibration and determining a vibration disappearance threshold for the subject's ability to no longer detect vibration while the magnitude of vibration is decreased.

50. (Previously Presented) The method of claim 49, wherein the vibration disappearance threshold is graded low, medium, or high when compared to a preset standard thereby indicating the severity of neuropathy.

51. (Currently amended) A medical diagnosis method, comprising:  
providing a portable multi-functional electronic communication and medical diagnostic device selectively operable in either a first operational mode ~~and~~ or a second operational mode, the device comprising a component for generating vibration at one or more of an available plurality of magnitudes, an outer casing enclosing the component and a probe extending outwardly from the outer casing, the probe being caused to vibrate by the component, the component being adapted to generate vibration in response to a

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remote wireless signal in a first mode when the device is operated as an electronic communication device comprising one or more of a cellular phone, pager, and beeper, the component being further adapted to generate vibration in the second mode when the device is used for medical diagnosis;

selecting the second mode of the device ~~to the exclusion of the first mode of the device~~;

applying the probe to a subject and generating vibration at one or more selected magnitudes; and

diagnosing a medical condition based on detection or non-detection of vibration by the subject.

52. (Canceled)

53. (Currently Amended) A method of detecting neuropathy in a subject, comprising:

providing a portable multi-functional electronic communication and medical diagnostic device operable in a first operational mode and a second operational mode, the device comprising a component for generating vibration at a one or more of an available plurality of magnitudes, an outer casing enclosing the component, and a probe extending outwardly from the outer casing, the probe being caused to vibrate by the component, the component being adapted to generate vibration in response to a remote wireless signal in the first mode when the device is operated as an electronic communication device comprising one or more of a cellular phone, pager, beeper, the component, being further adapted to generate vibration at in the second mode when the device is used for medical diagnosis;

selecting the second mode of the device ~~to the exclusion of the first mode of the device~~;

applying the probe to a subject and generating vibration at one or more selected magnitudes;

allowing the subject to indicate whether or not vibration can be detected; and

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determining the absence or presence of neuropathy by the subject's ability to detect or not detect the vibration.

54. (Canceled)

55. (Previously Presented) The device of claim 1, the vibratory component being further adapted to generate vibration a selected one or more of an available plurality of frequencies, the device further comprising a selector for selecting one or more frequencies of vibration in the second mode.

56. (Canceled)

57. (Canceled)

58. (Previously Presented) The device of claim 1, wherein the device is adapted to be applied to several extremities of a subject, one extremity at a time, the extremities including a finger, a toe, a tibia, a wrist, and a face.

59. (Previously Presented) The device of claim 1, wherein the vibratory component comprises a motor for generating vibration, a vibrating head adapted to be applied to the extremity of a subject, and a shaft transmitting vibration from the motor to the vibrating head.

60. (Previously Presented) The device of claim 59, wherein the motor is a DC motor and the shaft comprises an offset weight thereon.

61. (Previously Presented) The device of claim 59, wherein the motor is a piezoelectric transducer.

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62. (Previously Presented) The device of claim 1, further comprising a mechanism for audibly indicating one or both of the magnitude of vibration and the frequency of vibration being generated by the vibratory component in the second mode.

63. (Currently Amended) A portable electronic device comprising:

an outer casing;

a vibratory component disposed within the outer casing for generating vibration having at least one magnitude selectable from an available plurality of magnitudes;

~~a probe projecting outwardly from the casing for transmitting vibration from the vibratory component to a subject;~~

a mode selector for selecting between a first mode of the device and a second mode of the device;

a magnitude selector for selecting at least one magnitude of vibration of the vibratory component in the second mode, wherein the selected at least one magnitude is a fixed magnitude, a linearly increasing or decreasing magnitude, a curvilinearly increasing or decreasing magnitude, a step-wise increasing or decreasing magnitude, or a combination thereof; and

a display for indicating the magnitude of vibration generated by the vibratory component in the second mode;

wherein in the first mode the device is operable as at least one of a cellular phone, a pager, and a beeper, and the vibratory component generates vibration in response to a remote wireless signal; and

wherein in the second mode the device is operable as a medical diagnostic device and the vibratory component generates vibration of the at least one magnitude of vibration selected by the magnitude selector.

64. (Previously Presented) The device of claim 1, wherein the outer casing is isolated from the vibration generated by the vibratory component.

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65. (Previously Presented) The method of claim 28, wherein the outer casing is isolated from the vibration generated by the vibratory component.